ROAD SAFETY AUDIT STAGE 1: SPRINT SCHEME

The following document is the technical note which forms the first stage of the Road Safety Audit.

A Road Safety Audit is carried out when significant changes to the local highway network are proposed. The audit provides an independent assessment of the key design and operating arrangement of the highway works.

The Road Safety Audit identifies potential road safety issues or problems, recommends measures to eliminate or mitigate these problems and enables the 'client' in this case TfWM to provide a response to the audit. In some instances, the issues highlighted may not require further action as they have been considered as part of a wider discussion with supporting partners e.g. rationale for not including vegetation in central reservations.

A road safety audit is not a check to see if a scheme meets design standards.

Road Safety Audits are conducted at four stages throughout a highway improvement scheme:

Stage 1 – Completion of preliminary design
Stage 2 – Completion of detailed design
Stage 3 – Completion of construction
Stage 4 – Monitoring (12 months and 36 months)

A Road Safety Audit is conducted by an Audit Team, which is independent to the Design Team. The Audit Team will be a minimum of two people with appropriate levels of training, skills and experience in Road Safety Engineering and/or Accident Investigation.

Source: https://www.highwayengineer.co.uk/road_safety_audit.htm

Project:	**A34 Sprint - Walsall to Birmingham**	Job No:	**60599248**
Subject:	**Stage 1 Road Safety Audit - Designer's Response**		
Prepared by:		Date:	**23/04/2019**
Checked by:		Date:	**13/05/2019**
Approved by:		Date:	**14/05/2019**

Introduction

The following technical note is produced to document the Designer's Response to each issue raised within the Stage 1 Road Safety Audit (RSA) of the proposed A34 Sprint highway improvements works between Walsall and Birmingham.

The Stage 1 RSA was carried out by Waterman in November 2018 and is based on the plans presented for Public Consultation. The Designer's Response should be read in conjunction with this report.

The technical note indicates each of the concerns identified by the safety auditors together with the recommendation made to address the problem. The Designer's Response to the recommendations has been shown in *italics.* For ease of reference, the numbering system has remained consistent between the two documents.

7.0 MATTERS ARISING FROM THIS STAGE 1 ROAD SAFETY AUDIT

7.1 Problem: 1

Drawing: A34 – 01

Location: Darwall Street, Walsall

Summary: Risk of vehicle and vegetation collisions

From the site visit it was noted that there are numerous mature street trees along Darwall Street in Walsall which may conflict with the alignment of the proposed new bus route. There is a risk that a bus could collide with low-lying branches, which could lead to injuries for passengers if the bus braked sharply.

Recommendation

It is recommended that the street trees are either removed or the canopies raised sufficiently enough to ensure there is no conflict with vehicular traffic.

Design Organisation Response	☒**Accepted** ☐**Part Accepted** ☐**Rejected**

Removal or appropriate trimming of trees in Darwall Street will be considered as part of detailed design and once a full tree survey has been completed.

Client Organisation Comments
Trees along the proposed route which conflict with the proposals will be identified in the detailed design stage, both from a horizontal alignment and overhanging branch perspective.

7.2 Problem: 2

Drawing: A34 – 01

Location: Darwall Street, Walsall

Summary: Risk of vehicle and pedestrian collisions
It was noted during the site visit that Darwall Street is currently pedestrianised and vehicle movements are restricted. It is not clear from the drawings provided for audit how the proposed bus route takes this into account. It is the opinion of the Audit Team that by introducing buses into a pedestrianised zone without sufficiently informing pedestrians, such as partially sighted pedestrians, then there may be an increase in the risk of collisions between vehicles and pedestrians.

Recommendation
It is recommended that the design should inform pedestrians that there are buses travelling through the pedestrian zone. This could be achieved, for example, by adding a different texture of paving, such as corduroy paving, along the edge of the carriageway to denote the running lane to pedestrians.

Design Organisation Response	☐**Accepted** ☒**Part Accepted** ☐**Rejected**
The area of Darwall Street trafficked by motorised vehicles is already delineated by bollards. However, as part of the detailed design, further means of highlighting this delineation will be investigated.	

Client Organisation Comments
The segregation between vehicles and non-motorised users varies along the route and pedestrians commonly are seen walking where vehicles are able to drive. Increasing the distinction between pedestrian and vehicular areas shall be considered in the detailed design stage.

7.3 Problem: 3

Drawing: A34 – 01

Location: Darwall Street, Walsall

Summary: Risk of vehicle and pedestrian collisions
The existing block paving along Darwall Street may not be of adequate construction depth to withstand regular uses by buses. There is a risk that as buses travel over this blockwork it could deteriorate further and fail, which could lead to drivers losing control of the bus.

Recommendation
It is recommended that the existing carriageway and blockwork construction of Darwall Street is assessed to ensure it is sufficient for the regular use by buses likely to travel along Darwall Street.

Design Organisation Response	☒Accepted ☐Part Accepted ☐Rejected

The existing carriageway and blockwork construction in Darwall Street will be assessed as part of detailed design.

Client Organisation Comments
A ground investigation will be undertaken to establish the construction of the area and assess its ability to withstand bus movements.

7.5 Problem: 4

Drawing: A34 – 03

Location: Junction of Ablewell Street and Town Hill, Walsall

Summary: Risk of vehicle and cyclist collisions
It was noted that the design proposes to remove the cycleway lanes and advance stop lines on the approach to and at the junction of Ablewell Street and Town Hill, Walsall. It is not clear if any provision has been made within the proposals to accommodate cyclists through this junction. As a consequence of this, there is an increased risk of collisions between cyclists and vehicles. If a vehicle were to collide with a cyclist, then there is a risk of that injury could occur.

Recommendation
It is recommended that the existing advanced stop lines and associated cycle facilities at the junction are retained and incorporated into the new scheme design where possible

Design Organisation Response	☐Accepted ☒Part Accepted ☐Rejected

Advanced stop lines for cyclists have not been provided due to the reversion of Ablewell Street to two-way traffic, obviating the need for cyclists to climb the steep Town Hill. However, an NMU Audit will be reviewed and if the necessary, the road markings will be adjusted to provide facilities for cyclists as part of the detailed design.

Client Organisation Comments
Cyclists may still use Town Hill if traveling onto Peal Street. Retaining the advanced stop lines should be reviewed during detailed design.

7.5 Problem: 5

Drawing: A34 – 03

Location: Ablewell Street, Walsall

Summary: Risk of vehicle and pedestrian collisions
From the drawing submitted for audit it is noted that it is proposed to construct new off-road parking bays on the nearside northbound approach to the traffic signalised junction of Ablewell Street and Town Hill and on the nearside of the southbound approach to the traffic signalised crossing by Pool Street. When vehicles are parked in these parking bays the forward visibility to the nearside primary signal heads on both of these sets of traffic signals may be compromised and reduced. If visibility is reduced, then there is an increased risk of vehicles failing to stop for a

red traffic signal, which could lead to them overshooting the stop line and colliding with a pedestrian crossing the road. If a vehicle was to collide with a pedestrian, then it is likely that injury would occur.

Recommendation
It is recommended that the forward visibility to these sets of traffic signals is sufficient.

Design Organisation Response	☒**Accepted** ☐**Part Accepted** ☐**Rejected**
An assessment of forward visibility will be carried as part of detailed design.	

Client Organisation Comments
The forward visibility shall be assessed during detailed design stage.

7.6 Problem: 6

Drawing: A34 – 03

Location: Junction of Ablewell Street and Pool Street

Summary: Risk of vehicle to vehicle and vehicle to pedestrian collisions
It is proposed to remove the roundabout at the junction of Ablewell Street and Pool Street and replace it with a 'left in, left out' priority junction with a central reservation through the centre. It is not clear where vehicles which once turned right into, and out of, Pool Street will be diverted to make these manoeuvres and if these alternative locations are appropriate. There is a risk that if the alternative junctions and routes may not be adequate to accommodate the additional flows. If that is the case, and the capacity of the routes and junctions are exceeded, then risk of collisions will be increased.

Recommendation
It is recommended that the alternative junctions and routes for traffic which formerly used this roundabout are assessed to ensure they have the capacity for the additional traffic flows.

Design Organisation Response	☒**Accepted** ☐**Part Accepted** ☐**Rejected**
Traffic modelling is being produced for this and nearby junctions and will be reviewed prior to detailed design.	

Client Organisation Comments
Further work will be undertaken to establish the likely alternative routes taken by traffic and whether these are appropriate.

7.7 Problem: 7

Drawing: A34 – 03

Location: Junction of Ablewell Street and Bott Lane

Summary: Risk of side swipe / side impact collisions

On the drawing provided for audit it is proposed to reallocate lane two of Ablewell Street to a bus lane on the approach to the Town Hill junction. This proposed bus lane commences prior to the right turn lane for Bott Lane. It is not clear from the drawing provided how right-turning vehicles are to gain access to the right turn lane as they would be travelling through the newly constructed bus lane. There is a risk that this layout could cause confusion and hesitation with drivers unsure how to access the right turn lane, leading to sudden, last-minute manoeuvres. This could increase the risk of collisions between these vehicles and vehicles using the bus lane. If two vehicles were to collide then there is a risk of injury for the occupants of either vehicle.

Recommendation

It is recommended that drivers are able to access the right turn lane easily and that the signing/lining is clear. The provision of coloured carriageway surfacing would also help clearly inform motorists of the bus lane restrictions.

Design Organisation Response	☐**Accepted** ☐**Part Accepted** ☒**Rejected**
The line break in the bus lane is 30m in advance of the junction providing sufficient time for the right turning vehicles to manoeuvre into the off-side lane. Appropriate signage will be provided to inform the motorists that this manoeuvre is permitted. Coloured surfacing is unlikely to be implemented due to it posing maintenance issues.	

Client Organisation Comments
During the detailed design, clear signage will be developed to limit driver confusion.

7.8 Problem: 8

Drawing: A34 – 03

Location: Junction of Hill Street with Ablewell Street

Summary: Risk of side impact collisions

It is proposed to construct a parking bay on Ablewell Street to the south of the junction with Hill Street. It is not clear if an adequate visibility splay will be provided for vehicles turning out of Hill Street onto Ablewell Street due to the location of this parking bay. If adequate visibility is not provided at side road junctions then there is an increased risk of side impact collisions between vehicles exiting the side road and vehicles travelling along the main road. If a side impact collision were to occur, then this could lead to injury for the occupants of either vehicle.

Recommendation

It is recommended that the visibility splays for this junction are adequate.

Design Organisation Response	☒**Accepted** ☐**Part Accepted** ☐**Rejected**
The visibility splays will be assessed as part of detailed design	

Client Organisation Comments
The visibility will be assessed in the detailed design stage.

7.9 Problem: 9

Drawing: A34 – 04

Location: A34 Birmingham Road by Cricket Close

Summary: Risk of side impact collisions
On the A34 Birmingham Road approach to the Broadway roundabout it is proposed to widen the carriageway to accommodate an additional carriageway lane in the northwest direction. It is noted that to achieve this there will be land take required, but it is not clear from the drawing provided if this land take will be adequate to accommodate the Advanced Direction Signing on the approach to the aforementioned roundabout. If there is not sufficient space to locate the ADSs on the approach to the roundabout, then there is a risk that vehicles may approach in the incorrect lane which could lead to late lane changes and side swipe collisions which could lead to injury.

Recommendation
It is recommended that the approach to this roundabout be reviewed to ensure there is adequate space to accommodate any street furniture, such as the advance direction signing, which will be required.

Design Organisation Response	☒**Accepted** ☐**Part Accepted** ☐**Rejected**
Suitable locations for the large ADS signage will be reviewed as part of the detailed design.	

Client Organisation Comments
Appropriate signage will be developed in the detailed design stage and the space provided for signs will be provided.

7.10 Problem: 10

Drawing: A34 – 04

Location: A34 Birmingham Road by Cricket Close

Summary: Risk of vehicle and pedestrian collisions
It is noted from the drawing that it is proposed to upgrade an existing bus stop which is located on the approach to an existing traffic signal-controlled pedestrian crossing. The bus stop would appear to be located very close to this existing crossing and there is a risk that, when a bus is stopped, it will block forward visibility to the nearside traffic signal head. There is a risk that, if a vehicle attempts to overtake a stationary bus when the signals are on red, the driver may fail to see the signal and collide with a pedestrian using the crossing facility. If a vehicle were to collide with a pedestrian on the crossing, then there is the potential for injury to be caused.

Recommendation
It is recommended that adequate forward visibility is provided on the approach to the traffic signalised crossing. This may require the relocation of the bus stop.

Design Organisation Response	☒**Accepted** ☐**Part Accepted** ☐**Rejected**
The design will be adjusted to mirror the existing situation and position the Sprint stop after the traffic signal-controlled pedestrian crossing to avoid obscuring the nearside traffic signal head.	

Client Organisation Comments

The design will be amended to remove the risk.

7.11 Problem: 11

Drawing: A34 – 09

Location: A34 Birmingham Road junction with Pages Lane

Summary: Risk of pedestrians slips, trips and falls
It is noted that it is proposed to widen the A34 Birmingham Road carriageway by Pages Lane to create a bus priority traffic signalised junction. The Audit Team has concerns that the existing levels of Pages Lane may have not been taken into account within the design which could lead to the narrowed pedestrian island being reconstructed with an excessive crossfall. If this island has an excessive crossfall then there is a risk that, particularly in times of inclement weather, there will be an increased potential of slips, trips and falls for pedestrians which could lead to injury.

Recommendation
It is recommended that the crossfall at this location checked and is appropriate for pedestrians to use safely.

Design Organisation Response	☒**Accepted** ☐**Part Accepted** ☐**Rejected**
The level difference between A34 Birmingham Road and Pages Lane will be assessed as part of the 3D design. An alternative solution will be considered if the geometry of the proposed layout falls below standard.	

Client Organisation Comments
Since the safety audit was undertaken, this section has been removed from the proposals.

7.12 Problem: 12

Drawing: A34 – 023

Location: A34 New Town Road entrances to underpass

Summary: Risk of vehicle and cyclist collisions
It is noted from the drawing provided for audit that it is proposed to restrict the use of the A34 underpass to only buses, cycles and taxis. From the proposals it is not clear how cycles will be facilitated through this section or how they access the underpass and re-join the existing carriageways at either end. There is a risk that, as cyclists cross many lanes of traffic to gain access to and leave the tunnel, they may come into conflict with other vehicles which could

increase the risk of collisions. This issue is exacerbated by the straight alignment of the highway which may encourage elevated entry speeds to the bus only underpass. If a vehicle were to collide with a cycle, then there is a risk that the cyclist could be injured during the collision.

Recommendation
It is recommended that facilities are provided for cyclists at this location to safely access the underpass route.

Design Organisation Response	☐**Accepted** ☒**Part Accepted** ☐**Rejected**
With the Birmingham Cycle Revolution (BCR) segregated cycling route running in the same direction as the underpass, the majority of cyclists are expected to use the BCR and not the underpass. The use of the underpass by cyclists will be investigated further through design development.	

Client Organisation Comments
Although the number of cyclists is expected to be limited due to the adjacent dedicated cycle lane, this will be further considered in the detailed design stage.

7.13 Problem: 13

Drawing: A34 – 024

Location: James Watt Queensway

Summary: Risk of side impact collisions
It is proposed to divert vehicles travelling northbound on James Watt Queensway away from the A34 underpass and around the roundabout with the underpass being restricted to buses, taxis and cycles only. However, the drawing shows two carriageway lanes on the approach to an existing pedestrian crossing with lane two on the exit of the crossing being the restricted entrance to the underpass and only lane one for other vehicles. The Audit Team is concerned that this arrangement may cause side impact collisions as drivers attempt to change lanes immediately after the crossing to avoid the restricted underpass. If vehicles were to collide with one another then there is a risk of injury to the occupants.

Recommendation
It is recommended that a consistent number of lanes either side of the pedestrian crossing is provided. This could be achieved by continuing the two lanes past the underpass entrance with the underpass traffic exiting from offside of lane two, similar to the proposals for the southbound approach.

Design Organisation Response	☒**Accepted** ☐**Part Accepted** ☐**Rejected**
The design will be amended to allow two general traffic lanes on the approach to Lancaster circus and one lane to the underpass.	

Client Organisation Comments

Highway widths will be considered in the detailed design stage with the expectation that two lanes either side of the pedestrian crossing can be provided.

7.14 Problem: 14

Drawing: A34 – 024

Location: James Watt Queensway

Summary: Risk of vehicle and pedestrian collisions
It is noted on the drawings that it is proposed to construct a bus stop and shelter on the southbound lane on the exit to the A34 underpass on a central reservation island between two carriageways. It is not clear if this central reservation has sufficient width, especially at the shelter itself, to allow bus passengers to wait, queue and both access and egress the bus stop safely. There is a risk that, if there is insufficient space on the island, bus passengers may attempt to walk in the carriageways which could increase the risk of collisions with vehicles, which could lead to injury.

Recommendation
It is recommended that there is adequate space for the volume of passengers which are likely to use the bus stop.

Design Organisation Response	☒**Accepted** ☐**Part Accepted** ☐**Rejected**
Likely patronage numbers will be considered as part of detailed design and it is likely that pedestrian guardrail will be provided at the rear of the shelter to discourage pedestrians from crossing away from the adjacent controlled crossing.	

Client Organisation Comments
Options for controlling the movement of people will be considered in the detailed design phase.

7.15 Problem: 15

Drawing: 60561678-SKE-10-0000-C-0021, 60561678-SKE-10-0000-C-0023

Location: Birmingham Road south of Sutton Road roundabout and Birmingham Road Bell Road junction

Summary: Risk of head on collisions and vehicle and pedestrian collisions
The drawings provided for audit show two locations on Birmingham Road, one south of the Sutton Road roundabout and one north of the Bell Road, where new Sprint bus stops are proposed on either side of carriageway serving both directions of traffic flow. During the site visit it was noted that at both locations there are existing pedestrian refuges in the centre of the carriageway in between both proposed bus stops. These existing pedestrian refuges will prevent vehicles overtaking stationary buses waiting at the stops on either side of the road. Due to this there is a risk that drivers could attempt to drive around the pedestrian refuge into the opposing lane, which could lead to head-on collisions with other vehicles. There is also a risk that vehicles could collide with the refuge itself. If a vehicle was to collide with the central refuge and a pedestrian was waiting in the centre of the carriageway then there is a risk of injury.

Recommendation
It is recommended that either the pedestrian refuges are relocated away from the proposed bus stops or that the bus stops are relocated away from the existing pedestrian central refuges.

Design Organisation Response	☒**Accepted** ☐**Part Accepted** ☐**Rejected**
The position of these bus stops and their associated splitter islands will be reviewed in detailed design to discourage vehicles making unsafe overtaking manoeuvres.	

Client Organisation Comments
These shelter locations and surrounding infrastructure will be reviewed in the detailed design stage.

7.16 Problem: 16

Drawing: 60561678-SKE-10-0000-C-0025

Location: Walsall Road south of the junction with Newton Road

Summary: Risk of shunt collisions
The drawings provided show a proposed Sprint bus stop located on Walsall Road south of the traffic signalised junction with Newton Road. The Sprint stop is proposed to be located between an existing bus stop and the exit side of traffic signalised junction with Newton Road. There is a risk that vehicles turning left from Newton Road onto Walsall Road could collide with the rear of a stationary bus waiting at the Sprint bus stop due to its close proximity to the existing traffic signalised junction. If a vehicle was to collide with the rear of a stationary bus, then there is a risk of injury to both the vehicle occupants and the bus passengers.

Recommendation
It is recommended that the proposed Sprint bus stop is located a suitable distance away from the existing Walsall Road / Newton Road traffic signalised junction.

Design Organisation Response	☒**Accepted** ☐**Part Accepted** ☐**Rejected**
The position of this bus stop will be reviewed as part of detailed design.	

Client Organisation Comments
The stop location will be considered in the detailed design stage.

7.17 Problem: 17

Drawing: 60561678-SKE-10-0000-C-0027

Location: Perry Barr Island junction of Birchfield Road and Aston Lane

Summary: Risk of side swipe collisions
The proposed Sprint Bus route runs along Birchfield Road and across the Perry Barr roundabout with Aston Lane. Due to the compact dimensions of the existing multi lane roundabout, large

vehicles, such as buses, may struggle to stay in one lane and stray across into the adjacent lane. If another vehicle were to be in the adjacent lane whilst a bus travelled through the roundabout, then there may be a risk of side swipe collisions.

Recommendation
It is recommended that there is adequate space for the size of bus being proposed and other vehicles to be able to travel through Perry Barr roundabout concurrently.

Design Organisation Response	☐**Accepted** ☒**Part Accepted** ☐**Rejected**
This section of the A34 Sprint route falls within the scheme boundary of Birmingham City Council's (BCC) Perry Barr Highway Improvement Scheme. BCC will consider the accommodation of the Sprint vehicle as part of this scheme.	
Client Organisation Comments	
This junction is being amended by Birmingham City Council. We will pass information to BCC that will allow vehicle tracking of the junction and allow the designers to assess the swept path.	

CLIENT ORGANISATION STATEMENT:

I accept these proposals by the Design Organisation

Name:

Position: Scheme Delivery Manager

Organisation: Transport for West Midlands

Signed: **Dated**: 28/01/2020